

## CLAIMS

We claim:

1. An injection device comprising:  
a housing;  
a reservoir for containing a medicament;  
a needle for delivering the medicament; and  
a drive mechanism capable of exerting a force sufficient to expel the medicament from the reservoir through the needle, the drive mechanism comprising one or more drive springs formed of a shape memory alloy.
2. The injection device of claim 1, wherein the one or more drive springs are formulated to provide a shape memory mode of behavior within an operational temperature range of the injection device.
3. The injection device of claim 1, wherein the one or more drive springs are fabricated of a shape memory alloy that is in an austenite phase within an ambient temperature range of an environment of use of the injection device.
4. The injection device of claim 3, wherein the ambient temperature range of the environment of use is about 20° C to about 25° C.
5. The injection device of claim 4, wherein the one or more shape memory alloy drive springs are fabricated using a shape memory alloy that is in a martensite phase at a temperature that is at or above about 4° C.
6. The injection device of claim 1, wherein the one or more drive springs are fabricated of a shape memory alloy that is in a martensite phase within an ambient temperature range of an environment of use of the injection device.
7. The injection device of claim 6, wherein the ambient temperature range of the environment of use is about 20° C to about 25° C.

8. The injector of claim 7, wherein the one or more shape memory alloy drive springs are fabricated using a shape memory alloy that is in a austenite phase at or above about 37° C.
9. The injection device of claim 1, wherein the shape memory alloy forming the one or more drive springs is formulated to achieve a full austenite phase and a full martensite phase within an operational temperature range of the autoinjector.
10. The injection device of claim 9, wherein the operational temperature range of the autoinjector is from about 4° C to about 37° C.
11. An autoinjector comprising  
a housing;  
a reservoir for containing a medicament;  
a needle for delivering the medicament; and  
a drive mechanism comprising a shape memory alloy drive spring, the shape  
memory alloy being formulated to provide a drive spring that exerts a first force when  
the drive spring in a martensite phase and a second force, which is larger than the first  
force, when the drive spring is in an austenite phase.
12. The autoinjector of claim 11, wherein the first force is at least 20% less than the  
second force.
13. The autoinjector of claim 11, wherein the first force is at least 30% less than the  
second force.
14. The autoinjector of claim 11, wherein the first force is at least 40% less than the  
second force.
15. The autoinjector of claim 11, wherein the first force is at least 50% less than the  
second force.

16. The autoinjector of claim 11, wherein the shape memory alloy drive spring is formulated to provide a shape memory mode of behavior within an operational temperature range of the injection device.

17. The autoinjector of claim 11, wherein the shape memory alloy drive spring is fabricated of a shape memory alloy that is in an austenite phase within an ambient temperature range of an environment of use of the injection device.

18. The autoinjector of claim 17, wherein the ambient temperature range of the environment of use is about 20° C to about 25° C.

19. The autoinjector of claim 18, wherein the shape memory alloy drive spring is fabricated using a shape memory alloy that is in a martensite phase at a temperature that is at or above about 4° C.

20. The autoinjector of claim 11, wherein the shape memory alloy drive spring is fabricated of a shape memory alloy that is in a martensite phase within an ambient temperature range of an environment of use of the injection device.

21. The autoinjector of claim 20, wherein the ambient temperature range of the environment of use is about 20° C to about 25° C.

22. The autoinjector of claim 21, wherein the shape memory alloy drive spring is fabricated using a shape memory alloy that is in a austenite phase at or above about 37° C.

23. The autoinjector of claim 11, wherein the shape memory alloy drive spring is formed of a shape memory alloy formulated to achieve a full austenite phase and a full martensite phase within an operational temperature range of the autoinjector.

24. The autoinjector of claim 23, wherein the operational temperature range of the autoinjector is from about 4° C to about 37° C.

25. The injection device of claim 1, wherein the one or more drive springs are coiled wave springs.

26. The injection device of claim 11, wherein the shape memory alloy drive spring is a coiled wave spring.